

said second base layer is formed on the side of said emitter layer and has a second nitrogen atom concentration lower than said first nitrogen atom concentration.

15. The semiconductor device according to claim **11**, wherein

said collector barrier layer and said emitter barrier layer of said hot electron transistor are made of the same metal oxide.

16. The semiconductor device according to claim **11**, wherein

an interface of said emitter layer with said emitter barrier layer of said hot electron transistor is made of either silicon or a metal nitride.

17. The semiconductor device according to claim **11**, wherein

an interface of said emitter barrier layer with said emitter layer of said hot electron transistor and an interface of said emitter barrier layer with said base layer of said hot electron transistor are made of materials having different energy barrier heights respectively.

18. The semiconductor device according to claim **17**, wherein

said emitter barrier layer and said collector barrier layer of said hot electron transistor are made of the same material, and the interface of said emitter barrier layer with said emitter layer and said collector barrier layer have the same crystal structure.

19. The semiconductor device according to claim **17**, wherein

the interface of said emitter barrier layer with said emitter layer of said hot electron transistor and the interface of said emitter barrier layer with said base layer of said hot electron transistor have different crystal structures respectively.

20. The semiconductor device according to claim **11**, wherein

said base layer of said hot electron transistor is made of TiN and said emitter barrier layer and said collector barrier layer of said hot electron transistor are made of an oxide of Ti.

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